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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,080	01/15/2004	Bruce A. Block	042390P9923D	1911

7590 12/02/2004
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EXAMINER

NGUYEN, CUONG QUANG

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/760,080	Applicant(s) BLOCK ET AL	
	Examiner Cuong Q Nguyen	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-36 is/are pending in the application.
 4a) Of the above claim(s) 25-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 17-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>02-23-0 and 01-154</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Election/Restriction

1. Applicant's election without traverse of Embodiment claims 17-29 is acknowledged. However claims 25-29 are described a method for forming the a capacitor structure which is not belong to elected embodiment such as "selectively depositing a first conductive material " as claimed in claim 25. So. Claims 25-29 are withdrawn from consideration.

Claim Objections

2. Claims 17-24 are objected to because of the following informalities: the expression "the in-laid conductor structure including an intra-layer dielectric" in claim 1 should be changed to "the in-laid conductor structure formed in an intra-layer dielectric" and the expression "forming a first layer over the first layer" in claim 1 should be changed to "forming a first conductor layer over the in-laid conductor structure. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

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international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 17-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Quek et al. (US 6,261,917).

Regarding claims 17, 19, 20, Quek et al. discloses a method of forming a capacitor, comprising: forming an in-laid conductor structure (20, a Cu layer. Col.2 lines 23-27) on a substrate (10); the in-laid conductor structure formed in an intra-layer dielectric (16); forming a first layer (a conductive layer 24 which comprises depositing tantalum) (col.2 lines 28-32) over the conductor structure; forming a second layer (a capacitor dielectric layer 26, a deposited tantalum oxide layer. Col.3 lines 1-5) over the first layer; forming a third layer (a conductive layer 28) over the second layer; forming a patterned masking layer (45) over the third layer such that a portion of the third layer is exposed, and patterning the third, second and first layers in alignment with the masking layer, so as to form a vertical stack superjacent the conductor; and forming a second conductor (56) over the vertical stack. Fig.4 to Fig.8.

Regarding claims 18, 21, Quek et al. teaches that the second layer (26) is a capacitor dielectric layer which is formed of tantalum oxide. It is noted that tantalum oxide is known in the art as tantalum pentoxide, so tantalum oxide in Quek et al.'s device is a tantalum pentoxide layer as claimed.

Claims 17, 19-20, and 22-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Adler et al. (US 6,259,128).

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Regarding claims 17, 19, 20, 22, Adler et al. discloses a method of forming a capacitor, comprising: forming an in-laid conductor structure (20, a Cu layer. Col.2 lines 45-50) on a semiconductor substrate; the in-laid conductor structure formed in an intra-layer dielectric (col.1 lines 50-61); forming a first layer (a conductive layer 40 which comprises depositing tantalum) (col.2 lines 59-60) over the conductor structure; forming a second layer (a capacitor dielectric layer 70) over the first layer; forming a third layer (a conductive layer 100 which comprises depositing tantalum) (col.2 lines 10-20) over the second layer; forming a patterned masking layer (110) over the third layer such that a portion of the third layer is exposed, and patterning the third, second and first layers in alignment with the masking layer, so as to form a vertical stack superjacent the conductor; and forming a second conductor (a Cu layer in a contact hole 150. Col.4 lines 1-10) over the vertical stack including making electrical contact between the second conductor and the third layer. Fig.1 to Fig.4.

Regarding claim 23 and 24, as shown in Adler Fig.3A and Fig.4, prior the step forming the second conductor, an electrically insulating layer (120) over the third and patterning the insulating layer so as to expose portions of the third layer.

Conclusion

4. Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15,

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1989). The Group 2811 Fax Center number is (703) 872-9306. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

5. Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to CUONG Q NGUYEN whose telephone number is (571) 272-1661. The Examiner is in the Office generally between the hours of 6:30 AM to 5:00 PM (Eastern Standard Time) Monday through Thursday.

6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Eddie Lee who can be reached on (571) 272-1732.

7. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center Receptionists whose telephone number is 308-0956.



Cuong Nguyen

Primary examiner

11/28/04